National Aeronautics and Space Administration

Reduced Gravity Proposal

Submission Instructions

NASA's Office of Education Flight Week

JSC-REDUCEDGRAVITY@NASA.GOV

Contents

SUBMITTING THE LETTER OF INTENT due January 12, 2011

The Letter of Intent (LOI) is optional and marks the first level of communication the team makes with the program coordinator. The optional LOI serves as preliminary notice that the team plans to submit a proposal for consideration in the upcoming competition. Plans submitted in the LOI can be altered prior to submission of the formal proposal. Letters of Intent may be emailed or mailed to:

Sara Malloy
Johnson Space Center
Mail Code: AD4
2101 NASA Parkway
Houston , TX 77058-3696
(281) 483-7847
jsc-reducedgravity@nasa.gov

Template for LOI:

Institution Name -
Affiliated State Space Grant –
Team Lead Name, Email, & NASA MICI ID –
Faculty Advisor Name & NASA MICI ID –
Proposed Tie to NASA Research –

SUBMITTING THE PROPOSAL: electronically submitted and postmarked by January 26, 2011

A proposal submitted for competition to the program must be presented in the required format, and received by the program coordinator by the specified deadline date. Teams that did not submit an LOI may submit proposals without penalty. Proposals received on-line after the posted deadline will not be reviewed.

COPY REQUIREMENTS

SECTION	FORMAT REQUIRED	ADDITIONAL INFORMATION
ELECTRONIC COPY	1 electronic copy **required in .pdf format** Please **do not include scanned in**	Electronic copy of proposal should be submitted **in .pdf formation** to jsc-reducedgravity@nasa.gov.

	images such as letters of endorsement, faculty endorsement letters, etc. in your electronic submission. **These items should be mailed** along with the paper copy of your proposal.	
PAPER COPY	One complete copy that contains institution's and faculty's letters of endorsement The copy should be in the required format and be securely assembled. The proposal should be as complete as possible. Template sections that do not apply to your experiment should be included, but noted as "not applicable to this experiment." Do not omit sections.	• Mail to: Sara Malloy Mail Code AD4 NASA - Johnson Space Center 2101 NASA Parkway Houston, Texas 77058 • 1 paper copy
COPY REQUIREMENTS - provide 1 paper copy and 1 electronic copy (.pdf). Electronic proposals received after the submission deadline will not be considered. **Paper copies should be postmarked by the deadline.**		

CREATING A PROPOSAL:

Each team must submit 1 electronic copy of an original proposal for consideration and review. Each team must also mail one paper copy postmarked by the published deadline. Each proposal must be submitted in a four-section format containing the required sections in the order as listed: Technical, Safety Evaluation, Outreach Plan, Administrative. A table addressing the components of each section, the required format, forms and samples (as available) is included. Note that any section component that does not specifically apply to the team's proposal should be noted as such. No template section or component should be skipped or omitted under any circumstance. We recommend printing the following information and making a notebook for easy reference.

TEMPLATE SECTIONS

I. Technical Format

The technical section should include information on the experiment the team is proposing. The points awarded to this section by the reviewers are worth 70% of the overall total score; therefore, this section should include any information that a technical reviewer might find informative or instructive in understanding the aims and goals of the experiment. Evaluators ranking the proposal for its scientific merit will read only this section, so teams should be sure to address all relevant factors as listed below.

Section	Format Required	Additional Information
COVER PAGE (Page 1)	• Heading should read "Minority Servicing Institutions and Community Colleges Flight Week" • Title of the experiment • Topic area addressed • Team name • Team logo (optional) • Academic institution name/address • Designated student team contact name, e-mail address and phone number • Faculty supervisor name, e-mail address and phone number • Each team member's name, role (flyer, alternate flyer, faculty), academic year (freshman, sophomore, junior, senior), academic major, e-mail address, and NASA MICI ID. • Faculty advisor's / signature required at bottom	• Team contact must be a student team member • SAMPLE: MacPherson, Jennifer (macpher@hotmail.com). Flyer / Sophomore / Electrical Engr • The statement at the bottom of the cover page indicates that the team's faculty advisor endorses the proposal being submitted. Additionally, the Faculty Advisor Statement is required in the administrative section of the proposal. • You can register at http://www.NASAMICIconference.com for a NASA MICI ID.
TABLE OF CONTENTS (Page 2)	• Table of Contents should reflect the arrangement of the proposal with sections clearly noted • Pages should be numbered	
ADVISOR/ MENTOR REQUEST	• Teams will be assigned a NASA technical mentor for this project.	• If your team is currently collaborating on your project with a technical point of contact at NASA, please list their name in this section. However, this does not guarantee that this individual will be offered an official role in the flight program.
SYNOPSIS/ ABSTRACT	• A brief (up to 300 words) summary that touches upon the elements of the research being proposed	

TEST OBJECTIVES	• A description of the team's objectives in conducting the proposed experiment
	  ○ describe the aim of the experiment being flown
	  ○ mention whether or not the experiment is a follow-up to a previous experiment
	  ○ state hypothesis	

TEST DESCRIPTION	A brief, but detailed, description of the test being proposed. It should be written so that a practicing engineer or scientist can understand the experiment. Goals should be presented along with a description of the expected results. • Expected or actual results for accompanying ground-based experiments should also be presented here. Describe the quantitative/qualitative data to be collected and how it will be analyzed. • What does the team expect to learn as a result of the experiment? • Exactly how will the test be conducted? • Describe the quantitative/ qualitative data to be collected in flight and how it will be analyzed. • Why is a reduced gravity environment necessary for this experiment?	Note on free-floating experiments: • No more than 2 free-floating experiments will be accepted for this flight week. Considering this, your chances of acceptance to the program are increased if you design your research to be physically attached to the aircraft during flight. • Check the JSC User's Guide. http://jsc-aircraft-ops.jsc.nasa.gov/Reduced_Gravity/docs/AOD_33897.pdf
JUSTIFICATION FOR FOLLOW-UP FLIGHT	• Brief summary (less than 300 words) of any previous related experiment flown as part of the Reduced Gravity Program which is directly related to the experiment being proposed. (A Phase II or Part II experiment)	• Proposals for follow-up flights which do not include the justification summary will not be considered.

	• Include information regarding any continuation, modification, or expansion of the previously flown experiment. • Clearly justify the need for re-flying the experiment. • What were the previous results? What was the conclusion?	
REFERENCES/ BIBLIOGRAPHY	Standard MLA format	• Referenced works should be cited in the text of the proposal and in a "Bibliography." • Do not include Web sites. • References must be relevant! Prefereably one-half of references should come from research journals • SAMPLE: Howell, John R. Fundamentals of Engineering Thermodynamics, McGraw-Hill, 1992.
		Example of how the technical portion of your proposal will be EVALUATED http://microgravityuniversity.jsc.nasa.gov/pdfs/KCtecheval.pdf

II. Experiment Safety Evaluation

This section will be used by the Reduced Gravity Office test directors to confirm that each experiment is safe to handle on the ground, and safe to fly on the reduced gravity aircraft. When the team submits the proposal, it may not know exact dimensions or tensile strengths of parts and pieces planned for use; however, the team should be able to describe its plans to design, fabricate and operate the experiment in a safe manner. Information contained in this section will be used to form the basis of the Test Equipment Data Package submitted by selected teams in the weeks prior to flight. Flight safety is paramount; therefore, ranking in this category will place the team's experiment in a "SAFE/GO, CONDITIONAL, UNSAFE/ NO-GO" category. Experiments considered UNSAFE/NO-GO will not be considered for participation, in spite of technical or outreach merit.

Section	Format Required	Additional Information

EXPERIMENT SAFETY EVALUATION	Expectations for the Experiment Safety Evaluation section of the proposal should be completed in accordance with the instructions contained in Experiment Safety Evaluation guidelines provided by the Reduced Gravity Office.
	
	• See Experiment Safety Evaluation Guidelines (pdf) http://microgravityuniversity.jsc.nasa.gov/pdfs/safetyguidelines.pdf (note: ignore team composition description in this document)
	• Provide as much information as is known at the time of proposal submission.
	• Important questions to answer in the Experiment Safety Evaluation are:
	  ○ What are you bringing to Houston?
	  ○ What do you need on the ground?
	  ○ What are you doing with it in the aircraft?
		• The Experiment Safety Evaluation (Ground and Flight Operations) elements included in the proposal are **considered to be the initial stage** of the Test Equipment Data Package (TEDP) which is required of selected teams. The information contained therein should give the reviewers an adequate picture of the team's experiment so that a determination regarding its safety for ground handling / flight operations can be made.
		
		• *The final version of the TEDP is submitted by each selected team six weeks prior to flight. It is considered a separate requirement for flight, and will contain more detailed analysis of the experiment than what is presented in the Experiment Safety Evaluation portion submitted in the proposal.*
		
		• All sections should be addressed. If one or more sections are not applicable to the experiment, then state so. Do not, under any circumstances, omit a section.

III. Outreach Plan

The outreach section of the proposal will include the team's plan for disseminating the results of its experiment / experience to the general public. Points awarded to this section are **worth 30% of the overall score total**. Information contained in this section should focus on what outreach activities the team intends to do and what audience will be addressed.

Section	Format Required	Additional Information
OUTREACH PLAN	Provide an overview of the team's plan for disseminating outreach activities and plans. For maximum point value, the plan should include: • Team's objective in outreach activities • A website or a plan to design a website is mandatory! • Description of outreach audience. • Specific plans for activities. Each selected flight team will also be required to complete a 3-5 minute video (Quicktime, iMovie, or Movie Maker) of their Reduced Gravity Education Flight Program experience (including how the experiment was selected, hardware build-up, activities in Houston and results). Details about the video will be given to teams after selections.	• Worth 30% of overall score total • Websites need not be extensive at this point, but could introduce the team and its proposed experiment. • Note...posting your team's entire proposal to your website before selected teams are announced is not advised due to plagiarism concerns. • Outreach plans must be original to your team. **Do not attempt to copy outreach plans from previous proposals.** • Please document any completed outreach presentations/activities (classroom visits, community events, etc.) using our "Team Outreach Event Log" http://microgravityuniversity.jsc.nasa.gov/pdfs/Team_Outreach_Event_Log.pdf (see Supporting Documents section at the end of this document). **Your plan will be strengthened by incorporating:** • Specific plans and details (including names of schools, museums etc. to visit) • Letters or agreements from institutions who have accepted your invitation to address their group • Creative and/or innovative approach for delivering activities • Development of a mentoring relationship

		• Reaching out to traditionally underserved or underrepresented communities. For example, a predominantly minority K-12 school, a predominantly minority college or university, and women's organizations. • A press plan. • Alignment of an activity that will help a K-12 teacher meet a state standard or teaching objective. Ask a teacher for guidance, or look on your state education website. Make sure you tell us what standard you are going to meet and describe briefly how.
		Examples of outreach that scored well http://microgravityuniversity.jsc.nasa.gov/pdfs/ExampleOfGoodOutreach.pdf Example of how your proposal will be scored http://microgravityuniversity.jsc.nasa.gov/pdfs/OutreachEval.pdf

IV. Administrative Requirements

The administrative section of the proposal contains a letter of support from the team's institution, statement of involvement from faculty advisor, evidence of a plan to acquire funding, etc. Although this section is not awarded a point value per se, exclusion of these materials will affect the team's overall ranking when compared to more complete submissions. Additional information will be required if selected.

Section	Format Required	Additional Information
INSTITUTION'S LETTER OF ENDORSEMENT	Letter of endorsement on institution's letterhead	• This letter, from institution president, dean of college or department chair, indicates that the team's institution has knowledge of the team's interest in competing in this

		program and endorses the team's participation. • Teams will not be considered if their institution does not approve of their involvement. • Submit with paper copy only!
STATEMENT OF SUPERVISING FACULTY	Statement on institution's letterhead which reads: "As the faculty advisor for an experiment entitled "_____" proposed by a team of undergraduate students from _____ university/college, I concur with the concepts and methods by which this experiment will be conducted. I will ensure that all reports and deadlines are completed by the student team members in a timely manner. I understand that any default by this team concerning any Program requirements (including submission of final report materials) could adversely affect selection opportunities of future teams from _____ university/college."	• Statement of support from supervising faculty member indicates a willingness to supervise and work with the team during all stages of the competition. • Supervising faculty must also sign-off on the cover of the proposal as evidence that he/she has seen the proposal and approves of its submission for competition. • Teams without a working faculty advisor will not be considered. • Submit with paper copy only!
MINORITY INSTITUTION DESIGNATION	• Identify University as Minority Servicing Institution or Community College. • For institutions that serve a substantial Hispanic enrollment but have not been designated as an HSI or MI by the US	• Examples would be Historically Black Colleges and Universities (HBCU), Tribal Colleges and Universities (TCU),

	Department of Education, please submit documentation that your full-time Hispanic enrollment is at least 25 percent of your total enrollment.	Hispanic Servicing Institutions (HSI), or Community College • HSI designation documents should be on institutional letterhead.
FUNDING/ BUDGET STATEMENT	Any simple columnar layout showing expected expenditures associated with: equipment (building, operating, testing, shipping); transportation to/from Houston; accommodations/food/transportation in Houston, etc. Potential sources for funding should be included.	• No monetary award is given to teams selected to participate in this program; therefore, it is imperative that a team anticipate costs involved and work to seek funding. • Potential sources of funding include: institution, State Space Grant, corporate sponsors etc.
EXPERIMENTS INVOLVING ANIMALS	If you choose an **invertebrate** experiment, please provide the following information in the proposal: • Information on the test animal's life cycle • Procurement of animal • Transport of animal • Storage of animal • Experimental conditions & procedures • Post-flight activities • Disposition	• Proposals which involve experimentation on **vertebrate** animals will not be considered.

SUPPORTING DOCUMENTS

Please make yourself familiar with the following documents as you prepare to submit your proposal:

Proposal Evaluation Form Samples:

- Technical Evaluation Form (PDF)
  http://microgravityuniversity.jsc.nasa.gov/pdfs/KCtecheval.pdf

- Outreach Evaluation Form (PDF)
  http://microgravityuniversity.jsc.nasa.gov/pdfs/OutreachEval.pdf

Experiment:

- Fast Facts
  http://microgravityuniversity.jsc.nasa.gov/theProposal/documents/Fast%20Facts%20Rev%20B.pdf

- Experiment Design Requirements and Guidelines AOD 33897
  http://jsc-aircraft-ops.jsc.nasa.gov/Reduced_Gravity/docs/AOD_33897.pdf

- Interface Control Document ZGC-ICD
  http://jsc-aircraft-ops.jsc.nasa.gov/Reduced_Gravity/docs/ZG-InterfaceControlDoc-RevA2.pdf

TEDP - Technical Equipment Data Package: (to be completed for selected teams – THIS IS NOT REQUIRED FOR THE PROPOSAL)

Please note there are **two primary exceptions to the users guide** for student experiments.

1. The weight limit for test equipment is 300 pounds and the maximum volume is 24" X 60" X 60".
2. If teams wish to utilize free-floating test equipment , they should be aware of the following:
   a. Free-floating hardware should weigh less than 50 pounds and measure less than 24" on a side (assuming a cube).
   b. Only two free-float experiments will be flown each flight week (one on Tues/Wed and one on Thurs/Fri.)

OPTIONAL: Teams can utilize a program glovebox with the following restrictions: The weight limit for test equipment is 18.14 kg (40 pounds). Experiments MUST be designed to fit into one of two types of gloveboxes provided by the program.

    - 40 inches in length by 26.75 inches in depth by 27.75 inches in height or
    - 30 inches long by 26.75 inches in depth by 40 inches tall

- JSC Reduced Gravity Program Users Guide AOD 33899 (http://jsc-aircraft-ops.jsc.nasa.gov/Reduced_Gravity/docs/AOD_33899.pdf)

- TEDP Requirements Guidelines AOD 33896 (http://jsc-aircraft-ops.jsc.nasa.gov/Reduced_Gravity/docs/AOD_33896.pdf)

- Preparation of Stress Analysis Reports (http://microgravityuniversity.jsc.nasa.gov/theProposal/documents/Preparation%20of%20Stress%20Analysis%20Reports%20%288594001%29.pdf)

- RGO Hazard Analysis (http://microgravityuniversity.jsc.nasa.gov/theProposal/documents/RGOHAZARDANALYSIS.pdf)